

REMARKS

Claims 1-29 are pending in the application.

Claims 1-29 have been rejected.

Claims 1, 5, 6-9, 11, 13-15, 18-23 and 25-29 have been amended. As an initial matter, Applicants note that certain of the claim limitations have been amended to address certain informalities and not to respond to the substantive rejection, unless that claim amendment is specifically referred to in the remarks presented below.

Rejection of Claims under 35 U.S.C. § 102

Claims 1 and 15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U. S. Patent 6,463,671 issued to Milillo *et al.* ("Milillo"). Applicants respectfully traverse this rejection.

Claims 1 and 15, as amended, each contain limitations of the following form:

maintaining the first and second data volumes as unrelated volumes having no logical relationship;
preserving data contents of the second data volume; and
refreshing the second data volume to the data contents of the first data volume so that the second data volume becomes a point-in-time (PIT) copy of the first data volume, wherein refreshing the second data volume comprises overwriting all data of the second data volume with data copied from the first data volume.

Applicants respectfully submit that the sections of Milillo cited in the Office Action do not contain disclosure of these claim limitations.

The Office Action cites to Milillo 7:44-49 as the purported disclosure of the above-quoted claim limitation. That section of Milillo states:

As noted above, according to the prior art, making a data copy from source volume 52 to secondary volume 56 in a PPRC system may be accomplished by an internal snapshot copying mechanism for copying all of the data of source volume 52 to primary target volume 54, which data is then migrated to corresponding secondary volume 56.

Milillo 7:44-49. The Office Action further states that a “PPRC volume pair” is analogous to the claimed first and second data volume. *See* Office Action, p. 3 (citing Milillo 5:56-60). Applicants respectfully submit that the amended “maintaining” claim language requires that the first and second data volumes initially have no logical relationship. Since a PPRC volume pair is configured to have a logical relationship, as disclosed by Milillo, then Milillo does not disclose the amended claim language. Applicants further submit that if Milillo’s disclosed PPRC volume pair is taken to correspond to the claimed first and second data volumes, then the cited sections of Milillo do not provide disclosure of “refreshing the second data volume ... comprises ... overwriting all data of the second data volume with data copied from the first data volume,” as claimed. In describing the PPRC volume pair, which includes a primary system and a secondary system, Milillo states that “[a] data copy made to the secondary system occurs synchronously from a host point of view with write operations to volumes in the primary system.” Milillo 5:60-63. Milillo further provides that “[w]hen data is written to the primary storage system [of a PPRC volume pair], the data written to a particular volume is also written to a corresponding volume in the secondary storage system [of a PPRC volume pair] using a path to the secondary storage system.” Milillo 5:63-67. Thus, the secondary storage system of a PPRC volume pair, which is co-related to the claimed second data volume by the Office Action, is not (a) refreshed with the data contents of the primary storage system, nor (b) are the contents of the secondary storage system overwritten with data copied from the primary storage system, both as required to anticipate Claims 1 and 15.

Instead, Milillo's cited disclosure purportedly provides for the secondary storage system in a PPRC volume pair to receive a data copy of data written to the primary storage system synchronously with the data being provided to the primary storage system. Such functionality is not recited in Claims 1 and 15.

For at least these reasons, Applicants respectfully submit that independent Claims 1 and 15, and all claims dependent therefrom (Claims 2-13 and 16-26), are allowable over Milillo. Therefore, Applicants respectfully request the Examiner's reconsideration and withdrawal of these rejections.

Rejection of Claims under 35 U.S.C. § 103

The Office Action rejects Claim 2-14 and 15-29 under 35 U.S.C. § 103(a) as being unpatentable over Milillo in view of several different references. Applicants respectfully traverse these rejections.

In order for a claim to be rendered invalid under 35 U.S.C. § 103, the subject matter of the claim as a whole would have to be obvious to a person of ordinary skill in the art at the time the invention was made. *See* 35 U.S.C. § 103(a). This requires: (1) the reference(s) must teach or suggest all of the claim limitations; (2) there must be some teaching, suggestion or motivation to combine references either in the references themselves or in the knowledge of the art; and (3) there must be a reasonable expectation of success. *See* MPEP 2143; MPEP 2143.03; *In re Rouffet*, 149 F.3d 1350, 1355-56 (Fed. Cir. 1998).

Claims 2, 3, 16, 17 and 29: Dependent Claims 2, 3, 16, and 17 and independent Claim 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Milillo in

view of U.S. Patent No. 6, 434,681 issued to Armangau ("Armangau"). Applicants respectfully traverse these rejections.

As an initial matter, Applicants respectfully submit that for the reasons expressed above, Milillo does not disclose all the limitations of independent Claims 1 and 15 from which dependent Claims 2, 3, 16 and 17 depend. Further, independent Claim 29 contains a limitation similar in form to the limitation discussed above for Claims 1 and 15, which Applicants submit is not disclosed by the cited sections of Milillo. The Office Action does not suggest that Armangau provides this missing disclosure from Milillo. Therefore, for at least this reason, Applicants submit that not every claim limitation is disclosed by the cited references and therefore these claims are not rendered obvious by the references.

The Office Action cites Armangau as providing a teaching of the claim limitation "modifying data of the first data volume before any or all data of the second data volume is overwritten with data copied from the first data volume" (Claim 2) and the claim limitation "modifying data of the second data volume before any or all data of the second data volume is overwritten with data copied from the first data volume" (Claim 3). The Office Action cites to Armangau 2:20-30 as disclosure for these claim limitations and specifically quotes the passage "checking whether or not the storage location of the production data set has been modified since the time when snapshot copy was created." See Office Action, p. 5. Applicants respectfully submit that the cited section of Armangau does not provide disclosure for the limitations of Claims 2 and 3 discussed above.

Armangau purportedly provides disclosure of a production data set and a snapshot copy of the production data set. *See* Armangau 2:16-20. Armangau also refers to the disclosed production data set as “primary data storage” and the snapshot copy as being written to “secondary storage.” *See* Armangau 6:42-56. Armangau provides that “the snapshot copy includes data existing in the production set at a time when the snapshot copy is created.” Armangau 2:18-20. Once the snapshot copy has been created, then Armangau provides the following:

The method includes the data storage system responding to a request from the host processor for a write operation upon a storage location of the production data set. The data storage system responds by checking whether or not the storage location of the production data set has been modified since the time when the snapshot copy was created, and upon finding that the storage location of the production data set has not been modified since the time when the snapshot copy was created, copying data from the storage location of the production data set to an allocated storage location of the snapshot copy, and after copying data from the storage location of the production data set to the allocated storage location of the snapshot copy, performing the write operation upon the storage location of the production data set.

Armangau 2:20-34 (emphasis added). This section of Armangau establishes that the snapshot copy has already been created. Such disclosure is not disclosure of limitations of Claims 2, 3, 16, 17 and 29, which deal with data modification of a first data volume or the second data volume before writing the data to the second data volume. Further, Armangau discloses that the copy to the secondary storage must be complete before any modification of the primary. *See* Armangau 7:4-13 (“however, before the primary data storage subsystem accesses the primary storage 27 to modify any data in response to a request from the host 20, the primary data storage subsystem first inspects the remote copy pending flag of the physical storage unit to be modified, and if the remote copy pending flag is set, the primary data storage subsystem must copy the data of the physical

storage unit from the primary storage 27 to the secondary storage 29 and reset the remote copy flag, before modifying the data in the primary data storage subsystem.”)

For at least the above reasons, neither the cited sections of Milillo nor Armangau, alone or in combination, teach the “modifying” limitations of Claims 2, 3, 16, 17 and 29, and therefore these references cannot render the claims obvious.

In addition, Applicants also respectfully submit that the Examiner has not satisfied the burden of factually supporting the alleged motivation to combine the references. The Examiner must provide evidence to suggest the combination and “[b]road conclusory statements regarding the teaching of multiple references, standing alone, are not ‘evidence’” *See In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). Further, the Office Action does not establish that such a combination of the teachings of these references would meet with success, as required.

The Office Action suggests that it would have been obvious to combine Armangau with Milillo “to provide users services that allow for data to be backed up frequently in order to present the most up-to-date state of the primary data volume.” Office Action, p. 5. But Milillo provides disclosure of simultaneously copying data to both a primary and secondary data volume of a PPRC volume pair. Thus, the secondary volume would always have an up-to-date copy of data provided to the primary volume. Therefore, any purported advantage of Armangau “to present the most up-to-date state of the primary data volume” is unnecessary in light of Milillo’s disclosure. Thus, a person of ordinary skill in the art would not be motivated to combine the teachings of Armangau with Milillo.

Claims 4-9, 13-14, 18-23, and 26-28: Claims 4-9, 13-14, 18-23, and 26-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Milillo in view of U.S. Patent 6,665,815 issued to Goldstein (“Goldstein”). Applicants respectfully traverse these rejections.

The Office Action cites to Goldstein as purportedly providing disclosure for a variety of claim limitations not found within Milillo. These claim limitations include:

- “Creating one or more PIT copies of the first data volume prior to refreshing the second data volume to the data contents of the first data volume” (Claims 4, 5, 18, and 19);
- “Wherein one of the PIT copies of the first data volume is in the virtual state when the second data volume is refreshed to the contents of the second data volume” (Claims 5 and 19);
- “Creating one of more PIT copies of the second data volume prior to refreshing the second data volume to the data contents of the first data volume” (Claims 6, 7, 20, and 21);
- “Wherein one of the PIT copies of the second data volume is in the virtual state when second data volume is refreshed to the contents of the first data volume” (Claims 7 and 21);
- “Wherein the first data volume is a real or virtual PIT copy of another data volume when the second data volume is refreshed to the contents of the first data volume” (Claims 8 and 22);
- Etc. (See Office Action pp. 11-16 for limitations of all claims listed above).

Each of these claim limitations, and those not listed above but for which Goldstein is cited as providing disclosure, have a relationship between a first and second data volume provided by the independent claims from which those claims depend. The Office Action provides no clear instruction as to what structures disclosed within Goldstein correspond to the first and second data volume of the claims. Without such direction, it is difficult-to-impossible to respond to the argument presented in the Office Action for any of the claims for which Goldstein is cited. With the Office Action failing to provide such information, the Applicants respectfully submit that the particular parts of the cited

reference have not been designated as nearly as practicable as required by 37 C.F.R.

§ 1.104(c)(2). *See also* MPEP § 706.02(j).

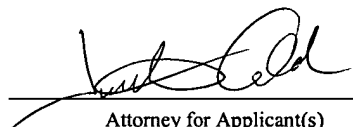
As an example of the difficulties presented by the rejections under Goldstein, Applicants refer to Goldstein 3:56-4:10, which is cited in the rejection of Claims 4 and 18. Goldstein 3:56-4:10 discusses generations of multiple point-in-time snapshots, but does not disclose creating such point-in-time snapshots prior to refreshing the second data volume. Instead, this disclosure provides for the creation of multiple point-in-time copies using the previous point-in-time copy as a base. Thus, a large number of snapshot backups can be carried by the system. The cited section provides no mention of a second data volume being refreshed with contents of a first data volume. As another example, Goldstein 3:43-45, which is cited against Claims 5 and 19, states that a snapshot is a virtual copy of a disk volume. However, this is not disclosure of refreshing a second data volume with the contents of a first data volume as required by the claim.

For at least these reasons, Applicants respectfully submit that to the degree that Applicants can analyze Goldstein without further direction from the Examiner, Goldstein does not disclose all of the claim limitations of the referenced claims. Applicants therefore respectfully submit that the combination of Milillo with Goldstein does not render the claims obvious and Applicants respectfully request the Examiner's reconsideration and withdrawal of these rejections.

CONCLUSION

In view of the amendments and remarks set forth herein, the application and the claims therein are believed to be in condition for allowance without any further examination and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned at 512-439-5090.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment, COMMISSIONER FOR PATENTS, P. O. Box 1450, Alexandria, VA 22313-1450, on March 1, 2006.

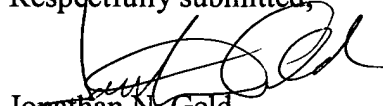


Attorney for Applicant(s)

3/1/2006

Date of Signature

Respectfully submitted,



Jonathan N. Geld

Attorney for Applicants

Reg. No. 44,702

(512) 439-5090 [Phone]

(512) 439-5099 [Fax]